

Notice of Allowability

Application No.

10/675,297

Examiner

David V Bruce

Applicant(s)

HEBECKER ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Application of 30 Sep 03.
2. ☒ The allowed claim(s) is/are 1-22.
3. ☐ The drawings filed on _____ are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date <u>20040227</u> | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input checked="" type="checkbox"/> Other <u>See Continuation Sheet</u> . |

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

Replace the abstract with the following:

--To intraoperatively generate an updated volume data set in which a image information of biological tissue is volume data set representing reconstructed from a series of n 2D biological tissue x-ray projections, one version, in intraoperatively acquired m 2D biological tissue x-ray projections the biological tissue 2D contour is segmented and this is back-projected in the reconstructed volume data set. In another version, in the volume data set the biological tissue 3D contour is segmented and this is projected in intraoperatively acquired m biological tissue 2D x-ray projections. The 3D contour is visually repositioned by projection in the m 2D x-ray projections in the volume data set, until its projection is substantially congruent with the biological tissue image information in the respective 2D x-ray projections. In both versions, a volume data set updated around the intraoperatively determined biological tissue 3D contour is generated.--

2. The following is an examiner's statement of reasons for allowance: the claims address a method of intraoperatively generating and updating a volume dataset where n 2D x-ray projections are collected from n different projection angles and reconstructed into a volume dataset, where after a positional change of the biological tissue being imaged, m 2D x-ray

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projections are taken ($m < n$) at m projection angles at an associated projection geometry, and either segmenting the new dataset so that a 2D contour is present in each of the m 2D projections and back projecting, using the associated geometries, the 2D contours into the volume dataset (as required in independent claim 1), or segmenting the original dataset to produce a 3D contour, projecting and properly repositioning the 3D contour into the dataset of the m 2D projections, and supplementing the volume dataset with further 3D contours representing the position change (as required by independent claim 12), to produce an updated volume dataset. This feature is neither shown nor fairly suggested in the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Barth, US 2004/0161144 A1, shows CT image segmentation, Dubuisson-Jolly *et al.*, US 6,195,445 B1, shows motion tracking, and Adler *et al.*, US 6,028,907 A, shows creating 2D contours.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David V Bruce whose telephone number is (571) 272-2487. The examiner can normally be reached on M - Th and alt Fri 8:00 - 4:30 subject to I-Flex.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward J Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



David V Bruce
Primary Examiner
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dvb

Continuation of Attachment(s) 9. Other: In the Drawings, figures 1 and 2 have text labels drawn with irregular line weight. Replacement sheets for figures 1 and 2 are required.